

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. Contract ID Code Firm-Fixed-Price		Page 1 Of 18	
2. Amendment/Modification No. P00009		3. Effective Date 2007MAY23		4. Requisition/Purchase Req No. SEE SCHEDULE		5. Project No. (If applicable)	
6. Issued By U.S. ARMY TACOM LCMC AMSTA-AQ-ADEC BEN P. MCFALL III (586)574-6673 WARREN, MICHIGAN 48397-5000 HTTP://CONTRACTING.TACOM.ARMY.MIL EMAIL: BEN.MCFALL@TACOM.ARMY.MIL		Code W56HZV		7. Administered By (If other than Item 6) DCMA ATLANTA 2300 LAKE PARK DRIVE SUITE 300 SMYRNA GA 30080		Code S1103A	
				SCD C PAS NONE ADP PT HQ0338			
8. Name And Address Of Contractor (No., Street, City, County, State and Zip Code) JCB INC 2000 BAMFORD BOULEVARD POOLER, GA 31322-9504 TYPE BUSINESS: Large Business Performing in U.S.				<input type="checkbox"/>		9A. Amendment Of Solicitation No.	
						9B. Dated (See Item 11)	
				<input checked="" type="checkbox"/>		10A. Modification Of Contract/Order No. W56HZV-05-D-0414	
						10B. Dated (See Item 13) 2005SEP23	
Code 0JKF0		Facility Code					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended, <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing items 8 and 15, and returning _____ copies of the amendments: (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. Accounting And Appropriation Data (If required) Payment will be made by Electronic Funds Transfer NO CHANGE TO OBLIGATION DATA							
13. THIS ITEM ONLY APPLIES TO MODIFICATIONS OF CONTRACTS/ORDERS							
KIND MOD CODE: G It Modifies The Contract/Order No. As Described In Item 14.							
<input type="checkbox"/>		A. This Change Order is Issued Pursuant To: The Contract/Order No. In Item 10A.			The Changes Set Forth In Item 14 Are Made In		
<input type="checkbox"/>		B. The Above Numbered Contract/Order Is Modified To Reflect The Administrative Changes (such as changes in paying office, appropriation data, etc.) Set Forth In Item 14, Pursuant To The Authority of FAR 43.103(b).					
<input checked="" type="checkbox"/>		C. This Supplemental Agreement Is Entered Into Pursuant To Authority Of: Mutual Agreement of the Parties					
<input type="checkbox"/>		D. Other (Specify type of modification and authority)					
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input checked="" type="checkbox"/> is required to sign this document and return _____ copies to the Issuing Office.							
14. Description Of Amendment/Modification (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) SEE SECOND PAGE FOR DESCRIPTION							
Contract Expiration Date: 2010SEP23							
Except as provided herein, all terms and conditions of the document referenced in item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. Name And Title Of Signer (Type or print)				16A. Name And Title Of Contracting Officer (Type or print) TOD V. MILLER TOD.V.MILLER@US.ARMY.MIL (586)574-6802			
15B. Contractor/Offeror (Signature of person authorized to sign)		15C. Date Signed		16B. United States Of America By _____ /SIGNED/ (Signature of Contracting Officer)		16C. Date Signed 2007MAY23	
NSN 7540-01-152-8070 PREVIOUS EDITIONS UNUSABLE				30-105-02		STANDARD FORM 30 (REV. 10-83) Prescribed by GSA FAR (48 CFR) 53.243	

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SECTION A - SUPPLEMENTAL INFORMATION

1. The purpose of modification P00009 is to
- a. Change CLIN 0208 from \$36,750.00 to \$57,127.76 an increase of \$20,377.76.
- b. Change paragraph C.20.d as follows:

Old Verbiage:

In addition to the 270 calendar days provided under paragraph E.7 of the basic contract, the contractor shall provide an additional 53 calendar days of support for Production Vehicle Test ant Aberdeen Proving Grounds in accordance with C.20 of the basic contract (CLIN 0208).

New Verbiage:

In addition to the 270 calendar days provided under paragraph E.7 of the basic contract, the contractor shall provide an additional 83 calendar days of support for Production Vehicle Test ant Aberdeen Proving Grounds in accordance with C.20 of the basic contract (CLIN 0208).

2. All other terms and conditions remain unchanged.

*** END OF NARRATIVE A 0009 ***

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0208	<p>SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS</p> <p><u>EXTENDED CONTRACTOR SUPPORT FOR PVT</u></p> <p>SECURITY CLASS: Unclassified</p> <p>1. Deliverable is IAW paragraph C.20.d.</p> <p>(End of narrative B001)</p> <p><u>Packaging and Marking</u></p> <p><u>Inspection and Acceptance</u></p> <p>INSPECTION: DestinationACCEPTANCE: Destination</p>		EA	\$ 57,127.76000	

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SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

C.1 REQUIREMENTS

The U.S. military requires a High Mobility Engineer Excavator, referred to as a HMEE Type I. The HMEE Type I is a vehicle with the capability to dig material and load material into a Military vehicle, perform precision excavation, travel at convoy speeds of 40 mph and be air transportable. The HMEE Type I must be capable of operating on and off road. The HMEE Type I and all attachments shall be built to meet the government's requirements in accordance with ATPD 2301 and this contract. Furthermore, the HMEE Type I shall include the Multi-Function Bucket, as written in the ATPD 2301 paragraph 3.2.4.1.1.1, in lieu of the bucket loader, as written in the ATPD 2301 paragraph 3.2.4.1.1 and HMEE Type I Unique Identification (UID) as outlined in Attachment 021.

This statement of work describes Government and the Contractor responsibilities in support of the HMEE Type I program. The support effort includes providing production representative vehicles for production verification testing, developing technical manuals, training of Government personnel, and providing on-site technical personnel to support the Government's First Article Test.

C.2 THE CONTRACTOR SHALL OVERPACK THE FOLLOWING ITEMS WITH EACH VEHICLE:

- a. Basic Issue Items (BII). BII are those items identified as essential for an operator or crew to place the HMEE into initial operation to accomplish its defined purpose. These items are essential to perform emergency repairs which cannot be deferred until completion of an assigned mission and routine maintenance. The BII are not listed on the engineering drawings. The BII includes those select common and special purpose tools, Test Measurement and Diagnostics Equipment (TMDE), spare and repair parts, operator publications, first aid kits, and safety equipment (for example, fire extinguishers) authorized for the HMEE Type I. Although spare and repair parts are not normally included in BII, exceptions may be made to meet the criteria above.
- b. The contractor shall overpack an Initial Service package (ISP) with each vehicle so the government can properly maintain the vehicle. The ISP shall consist of all service parts/items required to meet warranty service requirements and perform the first scheduled maintenance. The contractor shall mark each item with the nomenclature and part number to ensure the correct application.
- c. Any Component End Items (COEI) identified on the engineering drawing that are physically separate and distinct and must be removed from the HMEE Type I and separately packaged and stored for transportation will be separately listed by National Stock Number (NSN) in a table as an appendix in the operator's manual.

C.3 DATA REQUIREMENTS

- a. All data items appear in Section C. You shall prepare each data submittal as described in the Data Item Descriptions (DID) and the Contract Data Requirements List (CDRL).
- b. Data Items will be submitted in English in one of the following forms in order of Government preference:
- c. Contractor sends via e-mail in a TACOM compatible format.
- d. Contractor mails Disks or CD-ROM in a TACOM compatible format.
- e. Contractor submits using any other mutually accepted media.
- f. When the contractor is delivering data using paper as the media, the contractor will deliver the quantities of data listed on the CDRL in Section J. When the contractor uses electronic media, only one copy will be delivered to each address on the CDRL.

C.4 CONFERENCES

- a. Start of Work (SOW) Conference. The contractor shall participate in a two day Start of Work conference in Warren, MI within thirty (30) days after contract award. The purpose of this conference is to review all statements of work, data requirements and the program schedule to assure a complete understanding of the requirements. The meeting will also include a reliability meeting, a publications meeting, a provisioning guidance conference, and a new equipment training meeting. The Government and contractor will agree to the date of the start of work conference and the agenda.
- b. Integrated Product Team (IPT). Joint Government/Contractor IPTs shall be established to serve as the primary management tool for monitoring contract status. The IPT shall provide a means for coordinating and monitoring schedules and contract performance, thereby insuring adequacy, timeliness, and compliance with contractual requirements. The first IPT will be held concurrently with the SOW conference. The remainder will be called as needed. The contractor shall provide appropriate representative(s) to attend meetings. An agenda will be developed jointly at least 5 days before the meeting.

C.5 CONFIGURATION CHANGES (CDRL A001)

- a. The contractor shall establish a configuration baseline after completion of Production Verification Test and Government Approval of First Article Test. It is acknowledged that the contractor may want to offer to the Government configuration changes being introduced to

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its commercial production during the term of this contract. However, it is important for us to assess the impact of any proposed vehicle changes to the logistics and technical requirements established for this program. The contractor is therefore required to notify the Contracting Officer prior to implementing any configuration changes. The contractor shall submit the configuration change and status information in accordance with CDRL A001.

b. A request for change must be accompanied by supporting documentation and/or information to support our review and decision process. If necessary to validate the change, we reserve the right to require the contractor to do additional tests, up to and including a full First Article Test at no additional cost to the Government.

c. Submit the requests for changes to the configuration baselines to the Contracting Officer at least 60 days before the proposed application date. We reserve the right to disapprove the change within 30 days of receipt of the request. Requests for a change must include the following:

- (1) Rationale to support the necessity of making the change.
- (2) Any test results, planned testing, or other information on previous application of the change to show acceptability.
- (3) Identification of the affected parts and assemblies, drawings, sketches, calculations, and other data necessary to define the nature of the change the contractor is proposing.
- (4) Identification of any impact to manuals, maintenance procedures, repair parts stockage, special tools and test measurement and diagnostic equipment.
- (5) Any proposed decrease in contract price.
- (6) Submit one copy each of requests for change to the following addressees:

US Army Tank-automotive and Armaments Command
PO Box 5000
Warren, Michigan 48397-5000
Attn: AMSTA-LC-AF-CE
AMSTA-LC-AF-AQ
AMSTA-LC-CJ-BB
AMSTA-TR-E-ELE/21

d. Government approval of your change does not relieve you from your responsibility to furnish all items in conformance with the contract performance requirements. You shall accept full responsibility for any failure in the operation of the equipment that renders the vehicle not operationally ready as a result of changes we approve.

e. Any adjustment in contract price resulting from any of the changes shall be negotiated between the parties. Downward adjustments in the contract price may occur due to replacement costs of obsolete parts, introduction of special tool, changes in logistics support, or changes to technical manuals since these types of action require Government review, processing and administrative effort. We will not be responsible for additional cost of vehicles, testing or software associated with any change. The Government will not be liable for any cost you may incur due to delay in contract performance as a result of any request for change.

f. Engineering Changes - Government Directed. If the Government would like to change the vehicle configuration, the Procuring Contracting Officer (PCO) will notify you by a request for a technical and price proposal. You shall furnish the proposal, at no cost, within 30 days of receipt of request. Your proposal shall include statements of impact for Integrated Logistics Support, Transportability and MANPRINT.

C.6 VEHICLE HAND-OFF

The contractor will be responsible to hand-off all equipment deliverable under this contract to each gaining unit. The contractor shall perform the hand-off and activate the vehicle warranty. The contractor shall deliver all the vehicles ready to operate prior to New Equipment Training. The hand-off effort includes:

- a. Re-assembly of the vehicle to a fully operational configuration if the vehicle is shipped with any components removed. All tools and equipment required to complete the re-assembly will be the contractor's responsibility.
- b. Inventory of any material shipped with the vehicle, e.g., technical publications, special tools, initial service packages. (If desired, the inventory may be done concurrently with the unit's inventory.)
- c. Provide one-hour familiarization to 6 -8 people from the receiving unit on first machine delivered so they can safely move the vehicle until full training is conducted. Familiarization includes operator start-up, operating and shut down procedures, safe operations, and daily and weekly service locations and checks.
- d. Activation of the warranty, which includes stamping the effective date (date of delivery to gaining unit) on the vehicle warranty data plate, discussing with the unit the terms and details of warranty administration, and pointing out the warranty information included in the TMs.

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C.7 INTEGRATED LOGISTICS SUPPORT (ILS) DEVELOPMENT (CDRLs A002, A003, A004)

The contractor will use Military Performance (MIL-PRF) Specification 49506, Logistics Management Information (LMI), dated 11 November 1996, for use in identifying content, format, delivery and related guidance for logistics data except as otherwise identified in this contract. Also, Army Regulation (AR) 750-1, Army Materiel Maintenance Policy, dated 18 August 2003, may be used for guidance in identifying the levels of maintenance within the Army maintenance structure.

C.7.1 Maintenance Planning. The contractor shall conduct Maintenance Planning to determine the maintainability characteristics of the HMEE Type I. The analysis shall be documented in the contractor's format as an LMI summary entitled "Maintenance Analysis", and will identify the maintenance functions, level of maintenance, manpower, and support equipment required for each repairable item. The analysis will be in end item hardware breakdown sequence, and will also identify Functional Group Codes (In Accordance With (IAW) TB 750-93-1 (with Change 5, dated 27 Jun 1983), for each item. Instructions are contained in Attachment 1 (Maintenance Analysis). The LMI summary shall be delivered IAW DI-ALSS-81530 and CDRL A002.

- a. National Maintenance Work Requirement (NMWR) Components Candidate List and Analysis.
- b. NMWR Candidate List. The Government's preliminary NMWR component candidate list consists of repairable assemblies such as:
 - Engine
 - Transmission
 - Axles
 - Final Drives
 - Pumps (Hydraulic, Fuel Injection, Power Steering, etc\'85)
 - Electronic Control Modules/Units

The contractor shall deliver a NMWR candidate list consisting of all parts coded for repair at the National (General Support (GS) Level of Maintenance and above, IAW DI-ALSS-81530 and CDRL A003. The source data for this list will be the Maintenance Analysis, performed per paragraph C.7.1. The government will review, make changes as necessary and provide the approved NMWR candidate list to the contractor.

- c. Remanufactured NMWR Component Candidates. The contractor shall indicate for each NMWR candidate whether the item is currently available as a remanufactured, rebuilt or otherwise refurbished component, as part of their response to the NMWR candidate listing. The contractor shall identify the following:
 - (1) The supply and distribution channels (are they available directly from contractor as with all other parts/components?)
 - (2) The standard to which it is remanufactured, rebuilt or otherwise refurbished:
 - 1. To "Like-new" condition, using only new components.
 - 2. To "Serviceable" condition, using nonstandard (oversize/undersize) bearings or other components which may vary from the original component configuration.
 - (3) The warranty.
 - (4) The method used to distinguish between new vs. rebuilt/remanufactured component, such as part number difference, etc.

d. NMWR Data Analysis and Summary. The contractor shall perform an analysis for components on the government approved NMWR candidate list and prepare a data summary. The summary may be in the contractor's format, and shall be documented IAW Attachment 2 (NMWR Candidate List). The NMWR Data summary shall be delivered IAW DI-ALSS-81530 and CDRL A004.

e. NMWR Final List. The Government will use the data summary to compare the cost to buy new vs. the cost to rebuild, establish inventory levels, and determine how often this item will need to be repaired. The Government will review this data and finalize the NMWR Candidate listing to identify which items are to have NMWRs developed.

C.8 EQUIPMENT CONTROL RECORD (DA FORM 2408-9)

The contractor shall prepare a DA Form 2408-9, Equipment Control Records (Government furnished form) for each vehicle it delivers. The contractor shall prepare the form in accordance with the instructions in paragraph 5-7 c (3) Acceptance and registration of DA PAM 750-8, dated 25 Feb 05, to report acceptance of the HMEE Type I into the U.S. Army inventory. A blank copy of the form is enclosed at Attachment 3. The contractor shall have the Defense Contract Management Command (DCMC) Quality Assurance Representative (QAR) complete blocks 22 and 23 as the person accepting the item into the Army inventory. After the DCMC QAR completes blocks 22 and 23, the contractor shall distribute the DA Form 2408-9 as follows:

- a. Submit the control copy (copy # 1) within five working days to:
 - Director
 - U.S. Army Materiel Command's Logistic Support Activity
 - ATTN: AMXLS-MR

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Redstone Arsenal, AL 35898-7466

b. Submit the National maintenance Point (NMP) copy (copy #2) within five working days to:

Commander
U.S. Army Tank-automotive and Armaments Command
ATTN: AMSTA-LC-CJCB, MS326
6501 East 11 Mile Rd.
Warren, MI 48397-5000

c. Place Log Book copy (copy # 3) in a dry, protected location, secured in the operator station, and shipped with each vehicle.

C.9 PROVISIONING (CDRLs A005 and A006)

C.9.1 Provisioning Parts List. The Contractor shall develop and deliver LMI, (Provisioning Parts List (PPL)) IAW DI-ALSS-81529, Attachment 4 (Provisioning Data), and CDRL A005. LMI (PPL) data is required IAW MIL-PRF-49506 (dated 11 Nov 96) as specified on the LMI data worksheet for all separable parts and special tools up to and including Field level (Unit and Direct Support), BII, COEI, and Additional Authorized List (AAL) items identified on the HMEE Type I.

Prime part numbers and Commercial and Government Entity Codes (CAGE) will reflect the original equipment manufactures information unless that part is modified, changing form, fit, and function. Draft Repair Parts and Special Tools List (RPSTL) art (figure illustrations) is required at each provisioning conference.

The data shall be capable of being loaded into our Provisioning Master Record (PMR) without any modification to the data. CCSS has various methods by which the Contractor can deliver provisioning data and the Government will discuss these methods at the start of work meeting.

Each incremental submission shall have at least 800 lines, but no more than 1500 lines. The government prior to submission shall authorize deliveries of less than 800 lines. Each incremental submission must include at least one major assembly. All submissions will be labeled initial, changes, deletions or any combination of the three transactions.

C.9.2 Engineering Data for Provisioning (EDFP). The Contractor shall prepare the EDFP, i.e. technical illustration, in LMI Provisioning Line Item Sequence Number (PLISN) sequence for all items identified in C.9.1 IAW DI-ALSS-81529, Attachment 4 (Provisioning Data) and CDRL A006.

a. Technical Illustration Information: A separate technical illustration is required for each part number. Technical illustrations are not required for items accompanied by a copy of provisioning screening (e.g. FLIS, WEBFLIS, or by batch submittal part numbers to DLIS) which indicates this item has previously been assigned a valid stock number. The Contractor shall make available technical illustrations, to include the top assembly technical illustration, at each provisioning conference for Government review. After the government approves each technical illustration as being suitable for NSN assignment, the technical illustrations shall be submitted on a Compact Disk-Read Only Memory (CD-ROM) in Adobe Acrobat .PDF file, or some other software product format that the government agrees to, with each PPL submittal. A separate file is required for each technical illustration. The CD-ROM shall include a cross reference list that identifies the part number, technical illustration number, PLISN and file name for each technical illustration. All technical illustrations (hardcopy and electronic) shall contain the following information:

- (1) Commercial and Government Entity Code (CAGE)
- (2) Part Number
- (3) Provisioning Line Item Sequence Number (PLISN)
- (4) Provisioning Contract Control Number (PCCN)
- (5) Nomenclature. For industry standard common hardware, include descriptive nomenclature.

"Make from" items made from industry standard components shall include additional descriptive nomenclature. Examples of additional descriptive information include, at a minimum, the physical dimensions and all classifications (i.e. hardness, grade, thread type, surface finish, coatings,

industry specifications and etc.). Common hardware includes nuts, bolts, screws, washers, o-rings, cotter pins, c-clips, clevis pins, lamp bulbs, etc.

C.9.3 Provisioning Screening. (CDRL A007)

Contractor shall conduct provisioning screening of each item on the PPL for standardization or NSN assignment IAW DI-ALSS-81529 and CDRL A007. Provisioning screening results will be used to select valid part numbers, NSNs, and current unit of measure/issue prices for provisioning purposes. Common hardware item (nuts, bolts, screws, washers, lock washers, rivets, etc\85) will be screened by technical characteristics. The screening results must be available to review at each provisioning conference.

The contractor shall conduct provisioning screening using the Federal Logistics Information System (FLIS), WEBFLIS, or by batch submittal part numbers to DLIS. FEGLOG and HAYSTACK are no longer acceptable for provisioning screening.

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For additional information on FLIS and batch submittals to DLIS, refer to the Provisioning Screening User Guide at www.dlis.dla.mil. For additional information on WEBFLIS, go to www.dlis.dla.mil/webflis. There are two versions of WEBFLIS: Public Query and Restricted/Sign-on. Anyone with access to the Internet may access the Public Query version. The Restricted/Sign-on version requires a valid userid/password to access the system. Userids may be obtained by filling out a registration form. The registration forms are found on the DLIS web site. After accessing the Home Page, go into the Forms and Publications section and select the registration form for WEBFLIS. There are two forms available - one for government workers and one for government sponsored contractors.

C.9.4 Provisioning Conferences. Provisioning Conferences will be held at XMCO. The first conference will be held in accordance with ILS master schedule (Attachment 013).

C. 10 PACKAGING DEVELOPMENT (CDRLs A008, A009, A010)

The contractor shall, for items pertaining to the HMEE TYPE I, develop and provide packaging data for all TACOM managed provisioned items (i.e., "P" coded items other than "PR" or "PZ"), minimal logistics data for non-TACOM managed items, and maintain and update packaging data for each provisioned item. The contractor shall assess changes to engineering and logistic data for impact on packaging data, and shall provide packaging impact statements with Engineering Changes. For each change, the contractor shall determine if additional items require packaging data and if existing packaging data requires revision. The Contractor shall provide new and revised packaging data (as part of the Logistics Impact Statement paragraph C.V.1.1.4) for each Engineering Change if sufficient data is not in the TACOM packaging files. Contractor shall provide facilities, equipment, materials, and access to the provisioned items for packaging development. The contractor shall include information for each of the items, which shall be provided concurrently with each packaging data submittal, so that we can determine the adequacy of the contractor prepared packaging analysis and data submittal. This includes item drawings and data such as: Source, Maintenance, and Recoverability codes, Unit of Issue codes, Unit of Measure and Measurement Quantity, and copies of any applicable Material Safety Data Sheets.

a. Packaging/Logistics Data Entry. The Contractor shall develop, maintain and update packaging data IAW DI-ALSS-81529, Attachment 10 (LMI Packaging Data Products), Attachment 11 (LMI Packaging Data Transaction Format), and CDRL A008. LMI data is required IAW MIL-PRF-49506 and will provide for the entry of information to the computer data base known as the TACOM Packaging Data File. The TACOM approved Packaging Data Entry shall be electronically IAW CDRL A008 in an ASCII delimited text format using commas as delimiters. Quotation marks may be used as text qualifiers but are not required.

b. Special Packaging Instructions (SPI). The Contractor shall develop a SPI for each TACOM managed item. The TACOM managed items are expected to be mainly, but not exclusively, comprised of reparable items, and would include items such as those being considered as NMWR candidate items. Packaging processes and materials shall be described for cleaning, drying, preserving, unit, intermediate (as applicable), and exterior packing, marking, and unitization. Figures and narrative data shall be developed to describe the form, fit, and function of packaging in sufficient detail for production. The format and content of SPI shall be IAW DI-PACK-80121B and CDRL A009.

c. Validation Testing of Preservation Processing and Packaging. The Contractor shall validate packaging for each item IAW appendix F of MIL-STD-2073-1D (Standard Practice for Military Packaging), DI-MISC-80711A, and CDRL A010. The test report shall be provided concurrently with the SPI submittal, and shall include photographic records of package and testing.

C. 10.1 Equipment Preservation Data Sheet. (DI-PACK-81581) (CDRL A026)

a. The contractor shall develop and submit Shipment and Storage Instructions processing as described in MIL-STD-3003. When the data is finalized and approved, the contractor shall incorporate the data into the appropriate technical manual as requested. The contractor shall provide instructions for drive-on/drive-off shipment, and for temporary outside storage of up to 90 days such that exercising or maintenance would not need to be conducted (Level B), and for up to 2 years outside storage (Level A). The contractor shall consider disassembly procedures to meet clearance requirements for land, air, and sea shipment and to assure economical transportations. Packaging Requirements for Basic Issue Items (BII), Components of End Item (COEI), Initial Service Package (ISP), and kits required to be packaged that are shipped with the vehicle, shall be developed by the contractor. The contractor shall designate stowage locations and securement provisions. Stowage provisions shall not interfere with lifting, tie down or other transportation handling. To maintain the Equipment Preservations Data Sheet (EPDS), the contractor shall provide revision(s) for each approved design change affecting vehicle shipment configuration, weight, and/or transportability. The format and content of the EPDS shall be in accordance with DI-PACK-81581 CDRL A026.

b. The contractor shall validate only the level B procedures in the EPDS and shall submit a cost proposal to validate the Level A procedures when requested. Validation for EPDS procedures shall verify the adequacy of the preservation, packaging, packing and stowage of BII/COEI, the preservation procedures for shipment and storage, and the exercising requirements of vehicles in long term storage. The Government will verify and witness the contractor validation.

C.11 TECHNICAL PUBLICATIONS, DEPARTMENT OF THE ARMY (DA) TECHNICAL MANUALS (TM), DA RPSTL MANUALS, WARRANTY TECHNICAL BULLETIN (TB), AND ELECTRONIC TMS (ETM)/INTERACTIVE ETMS (IETM). (CDRL A011)

a. The following are the required Operation, Maintenance and Repair Part Manuals that will cover the HMEE TYPE I:

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TM 5-2420-XXX-10	Operator's Manual
TM 5-2420-XXX-23&P	Field Maintenance Manual Including RPSTL
TB 5-2420-XXX-14	Warranty Technical Bulletin (TB)

b. The contractor shall prepare and deliver the following:

(1) You shall develop the manuals cited above as IETMs IAW MIL-STD-40051-1C, Attachment 5 (Publication Requirements), Attachment 8 (-10 and -23&P Requirements Matrixes), and related CDRL A011 using the government furnished Electronic Maintenance System (EMS).

(2) The contractor will take full advantage of the intrusive testing and data bus interrogation capability of the EMS software and the vehicle's on-board Electronic Control Units/Modules. You will design the IETM troubleshooting with intrusive testing and data bus interrogation to help the mechanic accurately isolate the fault. Your IETM intrusive diagnostic approach will be based on our comment and review of your intrusive testability analysis report. The intrusive testing will minimally include the following subsystems: engine, engine history data storage and transmission.

(3) The Operator's Manual shall also be developed as a "Page-Based" document IAW MIL-STD-40051-2C.

(4) IETM RPSTL IAW MIL-STD-40051-1C, Attachment 5 (Publication Requirements), Attachment 6 (RPSTL Requirements), Attachment 8 (10 and -23&P Requirements Matrixes), and related CDRL A011.

(5) IETM Warranty TB IAW Attachment 5 (Publication Requirements), Attachment 7 (Sample Warranty TB), MIL-PRF-63034B(TM) (Bulletins, Technical-Warranty, Preparation of), and related CDRL A011.

(6) The Government requires the following instructions: Inspect, Test, Service, Adjust, Align, Calibrate, Remove/Install, Replace, and Repair which includes Fault Isolation/Troubleshooting, Removal/Installation, Disassembly/Assembly procedures, and Maintenance Actions to identify problems and restore serviceability to an item on all Field level (Unit and Direct Support) components and parts including the listing of items found in Attachment 5 (Publication Requirements).

c. You shall perform a 100% validation on all newly developed IETM data to ensure accuracy, compatibility and completeness. You shall insure that the data accurately reflects and supports only the HMEE TYPE I configuration procured including any and all changes to the configuration resulting from testing, vendor parts supply and production line changes. You shall notify the Government informing us of your planned validation schedule, start date, time, and location of validation 30 days prior to start of your validation; this will allow us time to attend and observe your processes. The Government holds open the option to conduct verification separate from the contractor's validation.

d. You shall support and provide one production configuration vehicle and it's attachments for your validation and our verification (if conducted separately from the contractor's validation). The HMEE TYPE I shall be manufactured at your own expense and can be submitted for acceptance for future deliveries, and must be re-furbished to fully comply with approved production configurations.

e. You shall support In Process Reviews (IPR) by providing samples of work accomplished to date or other requested data and identify improvements to your manuals, data, or Quality Assurance (QA) process required as a result of IPR comments. The Government reserves the right to witness your validation.

f. You shall correct all errors found in all publication deliverables resulting from Contractor and Government Reviews, validation, and verification at no additional cost to the Government.

g. The Government will review the Draft manuals to determine if the manuals are complete enough to go to verification (if conducted separately from the contractor's validation) or be returned for corrections. If the Draft manuals pass this review the Government will perform its verification of the manuals. The Government retains the right to conduct its verification by witnessing the contractor's validation.

h. You are required to validate the accuracy and usability of all publication deliverables. You shall have and use documented QA Review Processes and Inspections. The Government has the right to review validation records and witness validation processes. The Government has the right to verify all publication deliverables. Government reviews and verification may be done through statistical sampling and a mix of on-screen review and actual performance; but could include actual performance of all procedures and review of all screens, if deemed necessary by the Government. The Government does not intend to review and verify every screen at every review, but relies on complete, careful editing and review by the contractor. If there are indications that the contractor has performed incomplete or inadequate QA Reviews, the Government may elect to return products for rework and perform additional reviews on reworked product.

C.12 TRAINING (CDRLs A012 and A013)

12.1. TRAINING PROGRAMS: You shall prepare training materials for New Equipment (NET) for the HMEE.

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12.1.1. Develop and conduct one each course of instruction for operator/operator maintenance and for field support maintenance to train instructor and key personnel (IKPT) (a maximum of 12 students in a class). The contractor shall provide vehicles, special and common tools, parts, training aides, materials, and facilities to conduct training. Target the courses for individuals, who are skilled operators and mechanics on the current system, however, they are unfamiliar with the HMEE. This training should be developed using the train the trainer concept.

12.a. COURSES: Two courses shall be developed for the HMEE:

1. Operator and Operator Maintenance
2. Field Support Maintenance

12.a.1. OPERATOR AND OPERATOR MAINTENANCE: The course shall be directed to operators of the HMEE Type I, covering complete operation and safety. The operators' courses will be developed with measurable and testable objectives in partnership with New Equipment Training. All Operator Preventive Maintenance Checks and Services (PMCS) will be included. The course shall be no less than 70% hands on. The Course will be no more then 40 hours in length. The operator NET will teach all tasks that are associated with the proper set up, safety, operation, maintenance (to include trouble shooting), shutdown, transport and tie down procedures for the HMEE. Further, the training will demonstrate tactics, techniques, and procedures (TTP) that will allow the operators to become proficient with a minimal amount of time. The following training objectives will be considered during the development of the training

- safety
- Use controls and indicators
- Preventive maintenance checks and services (PMCS)
- Start up procedures
- Operation, attachment and tools
- Shut down procedures
- Transporting procedures
- Troubleshooting, to include self diagnostics

12.a.2. FIELD SUPPORT MAINTENACE: The course shall be directed to the maintainers of the HMEE Type I, covering operator and unit level PMCS, trouble-shooting, diagnosis and repair of engine, fuel, transmission, axle, braking, electrical, hydraulic, pneumatic, boom, location and repair of components, and ancillary systems. The development of this course is designed to bridge the training gap of the target audience, from current training standards through the development of new technologies, in order to increase the level of maintenance proficiency on this system. The advent of new technologies and components fielded with the HMEE are not adequately addressed in current army training. The course shall be no longer then 40 hours in length. Instruction shall consist of no more than approximately 30% classroom and no less than 70% hands-on. The maintenance NET will teach all tasks necessary for the maintenance personnel to become capable of basic operation of the HMEE to enable them to repair it. All special tools and test procedures will also be taught in the NET. Training shall not conflict with procedures established in the appropriate vehicle technical manual. The following training objectives will be considered during the development of the training.

- Safety
- Identify controls and indicators
- PMCS
- Start up procedures
- Basic Operation
- Shut down procedures
- Troubleshooting procedures (-10, -13)
- Use and comprehend the maintenance and parts manuals (-10,-13,-13P)
- Performing scheduled services
- Diagnose and troubleshoot systems (heat and air, electric, hydraulic, drive train -complete, brakes, and any other unique features for this system to include maintenance support device (MSD).
- Repair and/or replace systems according to maintenance allocation chart (MAC).
- Special tools.

12.b. TRAINING COURSE CONTROL DOCUMENT: For each course, the contractor shall develop a Training Course Control Document describing the course content (subject, topics, task), training material, types and duration of instructions, and resources required to conduct training in an institutional setting. The training Course Control Document shall contain front matter, introduction, course description data, outline of instruction summary, curriculum outline of instruction, course summary and presentation schedule.

12.c. TRAINING MATERIALS: Training materials shall be prepared for the HMEE Type I. The training package shall contain the elements of the training course outline prepared, delivered and finalized in accordance with CDRL A012 and CDRL A028. Deliverable training materials for each course (operator and maintainer) shall consist of the following.

- (a) Course outline

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- (b) Instructor guides
- (c) Student guides
- (d) Slides/view graphs

12.c.1. COURSE MATERIAL FORMAT/MEDIA & DELIVERIES: The contractor may submit materials developed and used for conducting Operator Maintenance Training for Commercial Customers with Supplemental Data/Information added to meet the Armys Requirements. Training Materials may consist of contractor handbooks, in-house training material, pamphlets, training literature, utility manuals, software manuals, maintenance manuals, logic diagrams, schematics, flow block diagrams, equipment description and functional data, testing procedures, visual aids, and other documents suitable for use in development of training programs. Visual aids may consist of videos, slides, transparencies, wall charts, schematics, illustrations, pictures, drawings, and cutaways of components. The contractor shall deliver all course control documents and training materials in an editable commercial electronic format: (Microsoft Word for documents and PowerPoint for presentations). Materials submitted must not conflict with the content of the vehicle technical manuals. Develop all student and instructor lesson material/guides used to conduct the training course. Provide the material in both hardcopy and digital format, in accordance with CDRL A012.

12.c.2. ELECTRONIC FORMAT: The materials shall be delivered in an editable digital format on CDROM, in accordance with CRDL A012, prepared with an editable commercial electronic format: (Microsoft Word for documents and PowerPoint for presentations).

12.c.3. ASAT Course Material Format/Media & Deliverables (CDRL A028).
The contractor shall convert the Operator, Operator Maintenance and Field Support Maintenance instructor guides into the Automated Systems Approach to Training (ASAT) software in support of course design and development. The government will provide access to the ASAT software. ASAT software can be downloaded at the ASAT homepage, * HYPERLINK " <http://www.asat.army.mil>. This software will allow for interactive course design, development, pre-authoring, and authoring that is required by TRADOC. Specifically, the ASAT software supports task development, standardized critical information, and lesson plan/Training Support Package (TSP) production capabilities. The contractor shall deliver all course materials in an editable ASAT electronic format in accordance with CDRL A028.

12.c.4. Reserved.

12.d. TRAINING COURSE COMPLETION REPORT: The contractor shall complete and deliver a Training Course Completion Report upon completion of each class in accordance with CDRL A013. The report shall include the course name, vehicle system, dates, training location, instructors names, student names, component, Military Occupational Skill, last four numbers of students social security number, home unit with city and state, email address, rank/grade and evaluation of student performance.

C.13 Reserved

C.14 SPECIAL TOOLS AND TEST EQUIPMENT LIST (STTE) (CDRL A014)

Support Equipment Tools and Test Equipment (STTE). The contractor shall deliver a list of Support Equipment Tools and Test Equipment IAW DI-ILSS-80868 and CDRL A014. The list shall be in tabular form and shall identify special tools and test equipment not contained in U.S. Army Supply Catalogs. Supply Catalogs contain common tool sets and are listed at US Army LOGSA web site at <https://weblog.logsa.army.mil/sko/index.cfm>. Maximum use of common tools, support equipment, and TMDE normally organic to the user is preferred. The list shall provide Nomenclature, Cage Code, National Stock Number (NSN), if assigned, Part Number, level of maintenance, and price of each item on the list.

Note: New TMDE items, those not identified in U.S. Army Supply Catalogs may require special source and calibration documentation in order to update/ provide data for possible inclusion to the TMDE register (DA Pam 700-21-1). The contractor shall provide all required data for all new TMDE.

Note: The following paragraphs are included to clarify special tools for Army use. Special tools are not identified as components in a SKO SC. Special tools are--

a. Fabricated tools that are made from stocked items of bulk material, such as metal bars, sheets, rods, rope, lengths of chain, hasps, fasteners, and so forth. Fabricated tools are drawing number controlled and documented by functional group codes in RPSTLs and located in TMs as appendices. Fabricated tools are used on a single end item.

b. Tools that are supplied for military applications only (that is, a cannon tube artillery bore brush, BII) or tools having great military use but having little commercial application.

c. Tools designed to perform a specific task for use on a specific end item or on a specific component of an end item and not available in the common tool load that supports that end item/unit (for example, a spanner wrench used on a specific Ford engine model and on no other engine in the Army inventory).

C.15 DIAGNOSTIC/PROGNOSTIC CAPABILITY (CDRL A015)

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a. Electronic diagnostic and prognostic testability analysis. The contractor shall perform a testability analysis of the HMEE TYPE I diagnostic and prognostic capability, to include number and types of diagnostic and prognostic tests available for all HMEE TYPE I components, assemblies, systems, and sub-systems and deliver a testability analysis IAW DI-MISC-80508A and CDRL A015. The report shall specify number and types of required TMDE, as well as a brief narrative description of the benefits to be derived from each diagnostic and prognostic test. The report shall contain all standard and proprietary data, data descriptions and error codes necessary to communicate with the electronic control module (ECM) / electronic control unit (ECU) and to maintain the electronically controlled subsystems. The contractor shall provide data, which specifies limits for all parameters, and how to interpret data outside limits. The contractor shall maximize the use of embedded Built-in Test (BIT) / Built-in Test Equipment (BITE) diagnostic and prognostic capabilities. All data buses and diagnostic connectors shall also be identified in detail.

b. Analog Diagnostic/ Prognostic testability analysis. The contractor shall perform a testability analysis of the HMEE TYPE I and deliver a testability analysis IAW DI-MISC-80508A and CDRL A015. The report shall include documentation showing complete analog fault isolation capabilities, troubleshooting methodology and prognostic capability for the HMEE TYPE I. The contractor will refer to the list of proposed tests that are referenced in Appendix C, Table C-2 of Attachment 9, the DCA Design Guide (Report # CR-82-588-003 Rev 1). The contractor can add to or delete tests from Table C-2 as necessary to best obtain HMEE Type I diagnostics. The contractor shall also provide the original equipment manufacturer's recommended minimum and maximum parameters for all Diagnostic Connector Assembly (DCA) and Transducer Kit (TK) monitored components. The contractor shall specify level of difficulty and time required to physically access test points and type of TMDE required.

C.16 SAFETY ENGINEERING AND HEALTH HAZARDS (CDRL A016)

C.16.1 Safety Engineering Principles. The contractor shall address the Safety and Health requirements of the PD in technical reviews. The contractor shall follow good safety engineering practices in establishing the HMEE designs and operational procedures, to include modifications to your commercial vehicle and components. The contractor shall have a system safety program in place equivalent to Attachment 12, System Safety Program Guide. As a minimum, the contractor shall do the following:

- a. Identify hazards associated with the system by conducting safety analyses and hazard evaluations. Analyses shall include operational, maintenance, and transport aspects of the HMEE along with potential interface problems with planned subsystems.
- b. Eliminate or reduce significant hazards by appropriate design or material selection. If hazards to personnel cannot be avoided or eliminated, take steps to control or minimize those hazards.
- c. Locate equipment components and controls so that access to them by personnel during operation, maintenance or adjustments shall not require exposure to hazards. Examples of hazards to be considered include: high temperature, chemical burns, electrical shock, cutting edges, sharp points, or concentrations of toxic fumes above established threshold limit values documented in the American Conference of Governmental Industrial Hygienists Threshold Limit Values and Biological Exposure Indices. All moving parts, mechanical power transmission devices, exhaust system components, pneumatic components and hydraulic components which are of such a nature or so located as to be a hazard to operating or maintenance personnel shall either be enclosed or guarded. Protective devices shall not impair operational functions.
- d. Assure that suitable warning and caution notes are included in instructions for operation, maintenance, assembly and repairs and that distinct markings are placed on hazardous components of equipment.
- e. The contractor shall provide as part of the Safety Assessment Report certifications and test reports of meeting all sections of MIL-STD-1180 that are required in the PD.

C.16.2 Safety Assessment Report (SAR). As a result of system safety analyses, hazard evaluations, and any contractor independent testing, the contractor shall perform and document a Safety Assessment Report (SAR) with a Health Hazard Assessment (HHA) included in the report. The SAR shall identify all safety features of the hardware, system design and inherent safety and health hazards and shall establish special procedures and/or precautions to be observed by our test agencies and system users. A health hazard is defined in DI-SAFT-80106B. Identified hazards shall have recommended engineering controls, equipment, and/or protective procedures to reduce the associated risk. It shall also outline any operations, maintenance and transport procedures needed by the test agencies and the system user. Assessments shall include consideration of the generation of hazardous wastes. The contractor shall prepare the SAR in accordance with CDRL A016 and DI-SAFT-80102B. The System Safety Program Guide (Attachment 12) provides guidance in the preparation of the Safety Assessment Report and Health Hazard Assessment. In preparing the health hazard portion of the Safety Assessment Report, the contractors shall provide a description and discussion of each potential or actual health hazard issue of concern for each subsystem or component. The contractor shall include classification of severity and probability of occurrence, and when the hazards may be expected under normal or unusual operating or maintenance conditions. Include in the SAR copies of Material Safety Data Sheets (MSDS) for all hazardous materials incorporated into the system. Identify all data sources for the SAR and all hazards in the report must be identified by hazard severity, hazard probability and risk level in accordance with the System Safety Program Guide (Attachment 12). The risk levels identified prior to mitigation and after mitigation. The mitigation actions identified as to whether they are completed or when they are to be completed. If mitigation actions are not completed prior to test, then manufacturer will provide interim mitigation actions to reduce all hazards to a low risk level. The mitigation actions must be completed prior to materiel release to the using units. The manufacturer will indicate in the SAR(/HHAR), that it is safe to test. The SAR(/HHAR) will address all safety and health risks to

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include operational procedures for equipment being tested, prior to test. The final SAR(/HHA) is subject to government approval. In the event the system is modified or procedural changes with regards to interfacing with the system are made after the final SAR(/HHA) is submitted, the contractor shall update the SAR(/HHA) to reflect those modifications or changes.

Examples of hazards to be included in the report are:

- a. Sharp edges/moving parts.
- b. Noise. Identify any hearing protection and type required, (e.g., single, double, muffs, or plugs). Identify the 85-dB (A) noise profile around the vehicle.
- c. Electrical issues.
- d. Whole body vibration. Provide test data, or perform equivalent testing, conforming to the guidelines and measuring procedures set forth in ISO2631-1 or SAE J1013.
- e. Toxic fumes (exhaust emission hazards) and hazardous materials, to include those formed by the introduction of the system, or by the manufacture, test, maintenance or operation of the system.
- f. Chemical hazards. (e.g., flammables, corrosives, carcinogens or suspected carcinogens, systemic poisons, asphyxiates, including oxygen deficiencies, respiratory irritants, etc.).
- g. Physical hazards. (e.g., acoustical energy, heat or cold stress, ionizing and non-ionizing radiation).
- h. Biological hazards. (e.g., bacteria, fungi, etc.).
- i. Ergonomic hazards. (e.g., lifting requirements, task saturation, etc.).
- j. Material Safety Data Sheets (MSDSs) for any chemicals and hazardous materials requiring MSDSs.

C.16.3 The assessment shall address:

- a. System, facility and personnel protective equipment design requirements (e.g., ventilation, noise attenuation, radiation barriers, etc.) to allow safe operation and maintenance.
- b. When feasible engineering designs are not available to reduce hazards to acceptable levels, alternative protective and measures must be specified (e.g., protective clothing, specific operation or maintenance practices to reduce risk to an acceptable level).
- c. Potential non-or less hazardous material substitutions and projected handling and disposal issues. The HHA will discuss the rationale for using a hazardous material and long term effects (such as potential for personnel and environmental exposure, handling and disposal issues/requirements, protection/control measures, and life cycle costs) over a non-or less hazardous material. The effects and costs should be considered over the life of the systems, including the cost of handling and disposal. Identify potential non-or less hazardous alternatives if they exist and provide a justification why an alternative cannot be used.
- d. Hazardous material data. The HHA shall describe the means for identifying and tracking information for each hazardous material.
- e. The HHA part of the assessment shall:
 - (1) Identify the hazardous materials by name(s); the affected system components and processes; the quantity, characteristics, and concentrations of the materials in the system; and source documents relating to the materials.
 - (2) Determine under which conditions the hazardous materials can release or emit materials in a form that may be inhaled, ingested, absorbed by living organisms, or leached into the environment and if the materials pose a health threat.
 - (3) Characterize material hazards and determine reference quantities and hazard ratings. Acute health, chronic health, carcinogenic, contact, flammability, reactivity and environmental hazards will be examined.
 - (4) Estimate the expected usage rate of each hazardous material for each process or component for the subsystem, total system, and program-wide impact.
 - (5) Recommend the disposition of each hazardous material identified. If for any scale of operation the reference quantity is exceeded by the estimated usage rate, material substitution or altered processes

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shall be considered to reduce risks associated with the material hazards while evaluating the impact on program costs.

C.17 Camouflage Line Art Drawing (CDRL A017)

The contractor shall provide line art drawings for the HMEE Type I in accordance with CDRL A017. The scale shall be no less than 1/8 inch equals one foot. The contractor shall prepare separate data depicting the following views:

- (1) front
- (2) back
- (3) right side
- (4) left side
- (5) top

All camouflage line art data shall include length, width, and height dimensions relative to each other and shall be detailed to the extent that all surface features of the item that cover one square inch or more of area are clearly delineated to scale. The lower right hand corner of each drawing shall contain the following information:

- (1) nomenclature of the item depicted
- (2) view depicted
- (3) contract number

C.18 TRANSPORTABILITY REPORT (CDRL A018)

The contractor shall update their Transportability Report with changes reflected in the final report. Contractor shall also provide errata sheet specifying change and location.

C.19 WARRANTY PERFORMANCE REPORT (CDRL A019)

In accordance with CDRL A019, the contractor shall submit a report reflecting all of the warranty claims processed on each vehicle within the appropriate reporting period. In addition to the data required by the DID, the report shall include the number of operating hours on the vehicle at the time of fault. The report shall also contain the warranty implementation date by vehicle serial number, shipping destination, and DODAAC.

C.20 CONTRACTOR SUPPORT OF GOVERNMENT TESTING

a. Training for the Production Verification Test (PVT) . The contractor shall provide two days of training to support government testing at Aberdeen Proving Grounds. Training shall include proper operating procedures, equipment and instrument familiarization, safety precautions, operator and maintainer Preventative Maintenance Checks and Services (PMCS), maintenance tasks, and all necessary materials and equipment required supporting testing of the HMEE Type I, Operators manual and if needed, supplemental training materials.

b. The contractor shall have available, a System Support Package (SSP) for use during the government test. The SSP shall support the vehicles and shall include:

- (1) Commercial manuals, with the addition of procedures for military unique requirements that will be tested (including operator, maintenance, and repair parts.)
- (2) Spare and repair parts, and service items needed to perform periodic services for the duration of the test, and supplies for maintenance and operation.
- (2) Qualified technical personnel to support government testing on an "as needed" basis to provide advice, trouble shooting, maintenance assistance, and repair of the vehicle when requested by the government. The contractor must be at the test site within 24 hours of notification by the government and without any additional cost to the government.

c. The contractor shall replace any part which fails to perform its function during the test, and correct any deficiency detected. All costs for parts and labor are the contractor's responsibility. The contractor shall provide parts and/or deficiency corrections within 24 hours of notification. If the contractor does not provide parts or deficiency correction within 24 hours, the Contracting Officer has the right to stop the test until the contractor completes the corrective action. The Contracting Officer also has the right to extend the approval or disapproval of the test and vehicle delivery schedule by a period equal to the delay caused by the contractor's failure to provide parts(s) or corrections, at no additional cost to the government. If a test failure requires rescheduling the test, the contractor is responsible for any cost incurred for the re-testing and the government reserves the right to extend the time for approval of the first article test.

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d. In addition to the 270 calendar days provided under paragraph E.7 of the basic contract, the contractor shall provide an additional 83 calendar days of support for Production Vehicle Test at Aberdeen Proving Grounds in accordance with C.20 of the basic contract (CLIN 0208).

C.21 FAILURE ANALYSIS AND CORRECTIVE ACTION REPORT (FACAR) (CDRL A020).

The contractor shall be provided Test Incident Report data during Production Verification and Follow On Production Tests. Upon acquiring a Test Incident Report (TIR), you shall assess the failure and shall furnish a Failure Analysis and Corrective Action Report with the proposed corrective action for each reported TIR. The FACAR shall indicate corrective action status as "final" or "interim."

a. FACAR Interim Response Times You shall provide interim failure analysis and corrective action responses after notification within the following times:

- (1) Critical Defect - 48 hours of phone response
- (2) Major Defect - 10 days
- (3) Minor Defect - 30 days No interim response required.
- (4) Informational - 30 days, if requested

b. FACAR Final Response Times A consolidated final response is required for all defects (Critical, Major and Minor) within thirty (30) calendar days after completion of testing. If your response is rejected, you will be officially notified and shall be required to resubmit the response within thirty (30) calendar days. Failure to provide the interim and final failure analysis/corrective action reports within the specified time limits or failure to provide the Government an acceptable response shall be cause for the reduction or suspension of the Government provided progress payments and/or suspension of vehicle acceptance.

C.22 FAT VEHICLE REFURBISHMENT

After successful FAT completion, the contractor shall transport the FAT vehicles from the test site and TACOM to its plant, at the contractor's expense. If the test vehicles do not meet 10/20 standards, the contractor shall thoroughly inspect the vehicles and submit a proposal for refurbishment. The proposal will be submitted within 30 days after FAT approval. We will negotiate the refurbishment effort after proposal submittal. The negotiated refurbishment effort will not include any configuration changes required as a result of testing. These changes are the contractor's responsibility pursuant to the Contractor First Article and Government First Article Testing provisions.

C.23 BALLISTIC SURVIVABILITY REQUIREMENT

C.23.1 The contractor shall design, develop, build prototypes, provide test support and produce an Armor Solution for the HMEE Type I (HMEE-I).

- (a) The solution shall consist of an interchangeable armored cab, or an add-on kit.
- (b) The solution shall minimize the effects on the operation and effectiveness of the vehicle system.
- (c) The solution shall provide complete operator protection against direct small arms fire and improvised explosive devices (ref. C.23.2).

If an add-on kit is proposed, it shall consist of an A-Kit (the permanent mounting provisions along with any vehicle modifications required to accept the armor package - e.g. suspension changes due to the increased weight of the armor kit), and the B-Kit (the armor components that will be mounted on the vehicle to provide operator survivability).

C.23.1.1 The program will be conducted according to all security controls identified in Attachment 015 (Security Classification Guide for Tactical Wheeled Vehicle Armor Systems).

C.23.1.2. Access to Classified Information: In the design, development, build prototypes, provide test support and produce an Armor Solution for the HMEE Type I (HMEE-I)., the contractor shall comply with Attachment 020 - DD 254 - Department of Defense Contract Security Classification Specification.

C.23.2 Armor Solution Design

(a) The design of the Armor Solution shall include opaque armor, transparent armor, doors with latching mechanism(s) and a separate, emergency egress (in case of vehicle rollover). The emergency egress shall allow escape in the event that the cab door is inaccessible or inoperable.

(b) The materials that shall be used are listed in Attachment 016.

(c) The frames supporting the transparent armor shall accommodate material up to 2-1/2 inches thick.

(d) When tested IAW SAE J1503, the operators station shall not exceed 80 degrees F with the armor applied, at an ambient temperature of

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120 degrees F and 25 percent relative humidity.

(e) The design shall also attempt to achieve the following:

Maximizing commonality of transparent armor sizes with existing Add-on Armor (AoA) Crew Protection Kits (CPKs). Following are the dimensions (inches) of transparent armor panels currently used by construction equipment in the inventory:\~

6 x 6 x 2.5	10 x 44 x 2.5	11 x 29 x 2.5	13.03 x 21.53 x 2.5	13.63 x 22.12 x 2.5
15.50 x 37.50 x 2.5	17 x 23 x 2.5	19 x 32 x 2.5	19.75 x 35 x 2.5	
20.25 x 35.25 x 2.5	23 x 26 x 2.5	23 x 44 x 2.5	17 x 23 x 2.5	25 x 38 x 2.5
17 x 39 x 2.5	23 x 26 x 2.5	10 x 44 x 2.5	35 x 19.75 x 2.5	22.12 x 13.63 x 2.5
32 x 19 x 2.5				

Maximizing commonality of attaching hardware and minimizing the number of installation tools.

Minimizing test requirements by maximizing the use of proven materials, processes and techniques.

Minimizing the logistic footprint by requiring for maintenance only the tools found in the General Mechanics Tool Kit, Automotive (NSN 5180-00-177-7033), and/or other equipment available at unit level.

C.23.3 Combat Lock.

Doors shall incorporate a device (combat lock) that allows the door to be secured from the inside. The combat lock shall prevent the door from being opened from the outside by enemy personnel, and by the force of an IED explosion. An override shall be provided so that emergency personnel outside the cab can open the door. The override shall consist of hex head bolts having 1/2-inch across-flats dimension, which when removed from the outside, will allow the combat lock to be disabled.

C.23.4 Trade-Off Analysis.

The contractor shall perform a trade-off analysis for the HMEE-I. The analysis shall include an engineering assessment of a variety of candidate solutions considered by the contractor, the rationale supporting the down-selection to a primary candidate solution, and the impact of the Armor Solution on the vehicle and its subsystems performance (e.g. tires, front axle, suspension, drive train, hydraulics, electrical, power, air conditioning system) relating to speed, lift capability, center of gravity, vehicle reliability, vehicle maintainability, visibility, transportability, and safety.

The contractor shall also estimate differences between the vehicles Pre-Armor Solution performance capabilities and its Post-Armor Solution performance capabilities, and propose measures to mitigate degraded performance.

The contractor shall present Program Management CE/MHE with a trade-off analysis in a form which identifies the safety, risk, and cost impacts. PM CE/MHE reserves the right to select the proposed solution that best meets the programs cost, schedule and performance needs.

The formal trade-off analysis shall be delivered IAW CDRL A021.

C.23.5 Preliminary Design Review (PDR).

Not more than 30 days after contract modification, and prior to the start of detailed design, the contractor shall deliver a PDR briefing to PM CE/MHE. The contractor briefing shall include a trade-off analysis, overall plan and general design strategy.

If the contractor needs to purchase materials before the PDR, a written request for permission must be submitted to the PCO for approval. The contractor remains responsible for any design or hardware changes resulting from the CDR and/or prototype testing.

C.23.6 Critical Design Review (CDR).

The CDR shall be conducted at an agreed upon facility by the contractor and the government, not later than 30 days after the PDR (unless scheduled otherwise by the Government), and prior to the start of the prototype fabrication/assembly. The contractor shall provide a mock-up of the proposed operator's field-\-of-view area for the system. The type of mock-up (wood, paper - to scale) shall be determined by the contractor. The Government will review the proposed field-of-view area during the CDR. The Government will provide a subject matter expert (SME) to perform the evaluation. If the government does not respond no later than 07 November 2006, the contractor shall be allowed to proceed with the proposed design and fabricate prototype and production kits.

If a major change is identified while at CDR and the change cannot be implemented at CDR, the contractor will submit a change concept to the government within 30 days after completion of CDR for technical and concept review prior to implementing and building the new mock up with changes. If the government chooses, the contractor shall be required to provide a revised mock-up of the proposed operator's field-\-of-view area for the system. The type of mock-up (wood, paper - to scale) shall be determined by the contractor. The

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Government will review the revised proposed field-of-view area during the second CDR. The Government will provide a subject matter expert (SME) to perform the evaluation. The second CDR shall be conducted at an agreed upon facility by the contractor and the government. The contractor may submit a proposal for the major change effort.

Upon approval of the design at CDR or revision (due to major changes by the government at CDR) the contractor shall be allowed to proceed with the proposed CDR plans and may fabricate prototype and production kits. The contractor remains responsible for any design or hardware changes resulting from the prototype testing.

C.23.7 Safety

The contractor shall submit a supplemental Safety Assessment Report (SAR) to the Government for the vehicle with Armor Solution, in accordance with CDRL A022. The report will identify the hazards resulting from the application of the Armor Solution, the likelihood of occurrence, the severity of resulting injury/damage and the mitigation actions taken. Hazards that have severe consequences and cannot be eliminated by design changes shall be clearly identified. An assessment of vehicle stability and an estimation of operational limitations resulting from the addition of the Armor Solution shall be included in the report.

The contractor shall provide cautions and warnings for the Armor Solution, to be affixed onto the inside of the vehicle, during installation, to alert the operator of any required notices and/or warnings.

C.23.8 Transportability

The contractor shall submit a supplemental Transportability Report to the Government for the vehicle with Armor Solution, in accordance with CDRL A023. The report will identify any compromises in transportability that result from the application of the Armor Solution, and the means to be applied (e.g. temporary reconfiguration of the vehicle) such that the baseline transportability of the vehicle without the Armor Solution installed remains IAW the requirements of the HMEE-I ATPD 2301.

C.23.9 Prototype Armor Solution.

C.23.9.1 Prototype Armor Solution Ballistic Test Coupons. Reserved

C.23.9.2 Prototype Armor Solution for Ballistic Test. Reserved

C.23.9.3 Prototype for Automotive Tests. Reserved

C.23.9.4 Simulation of Army A-Kit and 4-in-1 Bucket. The contractor shall modify one HMEE-I PVT vehicles, currently at Aberdeen Proving Grounds, MD, to add 1,610 pounds to simulate the weight of an A-Kit 965 pounds to simulate the 4-in-1 bucket, together with any other weight as necessary to accurately represent the future base vehicle configuration. This effort will include all modifications to the cab, chassis, or any other part of the vehicle necessary to incorporate the proposed A-Kit. The work will be done at Aberdeen Proving Grounds and will accurately reflect the total weight as well as the proper weight distribution.

C.23.10 Drawing Packages. Reserved

C.23.11 Lessons Learned

The U.S. Army has learned some important lessons that contractors should be familiar with when designing Armor Solution. These lessons are provided as Attachment 018 (Lessons Learned on Tactical Wheeled Vehicle Armor Kit Designs).

C.23.12 Welding: Welding and weld inspection shall be performed in accordance with AWS D1.1 Structural Welding Code, Steel and AWS D1.2 Structural Welding Code, Aluminum as appropriate. Substitution of an equivalent welding standard may be allowed with prior Government approval.

C.24. Attachment Feasibility Study (CDRL A027 and Attachment 019) - The contractor shall perform a feasibility study to investigate acceptable locations for the on-board storage of the COEI attachments/tools (i.e. the portable hydraulic tools identified in Attachment 019, being the picket pounder, the rock/pavement breaker, the hammer/impact tool, the chain saw, and the impact wrench, together with all their ancillary components as specified in the respective paragraphs of the HMEE Purchase Description Attachment 014). The contractor shall consider the impacts on the base standard vehicle (i.e. with a 4-in-1 loader bucket and armor A-kit installed), as well as the fully-armored vehicle (i.e. with the armor B-kit installed), and shall deliver a report IAW CDRL A027. The analysis shall include an engineering assessment of the impact of potential storage locations on: operation in all modes; visibility; transportability; vehicle maintenance; safety; and cost impacts. If on-board storage of the components is deemed to be feasible, the contractor report IAW CDRL A027 shall be in the form of a trade-off analysis that identifies all feasible candidate solutions, and identifies a primary candidate solution, with the rationale supporting the downselection to that primary candidate. It is desired that the contractor identify more than one storage location for each attachment/tool.

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